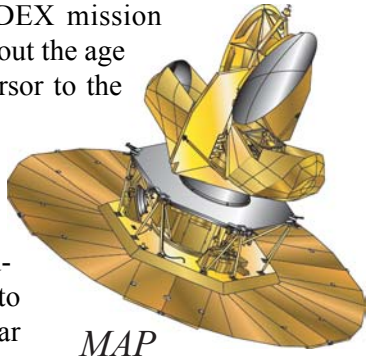
Chapter 8. The Explorer Program

NASA's Explorer program is vital to realizing the SEU theme's objectives. It offers frequent opportunities to carry out small and medium sized-sized missions (SMEX and MIDEX) that can be developed and launched in a short (approximately four-year) timeframe. These focused missions can address science of great importance to the SEU theme and respond quickly to new scientific and technical developments. The Mission of Opportunity option enables valuable collaborations with other agencies, both national and international. Explorer Missions and Missions of Opportunity are selected for science value through competitive peer review.

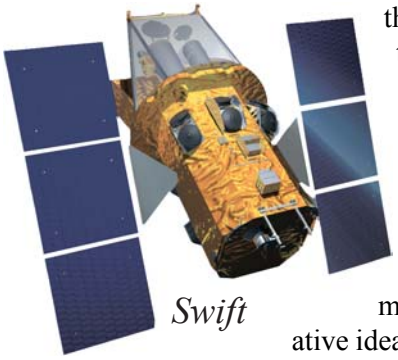
Explorer missions currently in operation or development that address directly the SEU science objectives include:

The Microwave Anisotropy Probe (MAP), a MIDEX mission launched in 2001, will answer fundamental questions about the age and matter density of the Universe and is a vital precursor to the Inflation Probe of the *Beyond Einstein* program. Prototypes of the advanced spectroscopes for Contellation-X will fly as a Mission of Opportunity on Japan/NASA's Astro-E2 in 2005. Other proposed Explorers are relevant to *Beyond Einstein*, including both missions of opportunity (e.g., laser ranging equipment attached to missions to other planets for precision tests of relativity in the Solar System) and dedicated missions.



MAP

Several Explorers besides Astro-E2 will address the science objectives of Cycles of Matter and Energy. The Galaxy Evolution Explorer (GALEX), a SMEX mission launching in early 2003, will map the global history and probe the causes of star formation over 80 percent of the life of the Universe. SPIDR, a SMEX mission launching in 2005, will detect the matter that makes up the "cosmic web" on which the structure of the Universe evolved. Swift, a MIDEX mission to be launched in late 2003, is dedicated to the study of gamma-ray bursts.



Swift

Each solicitation for Explorer proposals elicits more high-quality experiments than can be implemented. Peer review, the ability to implement new, creative ideas, and quick reaction to recent discoveries are essential elements of the high science value of the Explorer program. Suggesting a queue of future Explorer missions would countermand this mandate.

laser
interferometer
space antenna

constellation-x

einstein probes